Doing the Right Thing In the Right Place

Nulhegan Basin Division of Silvio O. Conte National Fish and Wildlife Refuge, Sustaining Healthy Forests for Wildlife, Plants, and People

About The Refuge

The Nulhegan Basin Division, located in northeastern Vermont, represents the largest forested tract managed by the Conte Refuge. The Division occurs at the intersection of the Connecticut River Watershed (i.e., Conte Refuge's legislated boundary) and the Northern Forest. The Nulhegan River and three of its four tributaries-the North, Yellow, and Black Branches – exert a strong influence over the Basin's habitats. Bogs, fens, shrub-dominated wetlands, and swamps, as well as, lowland conifer, montane, and hardwood forests support a diversity of plants and animals.

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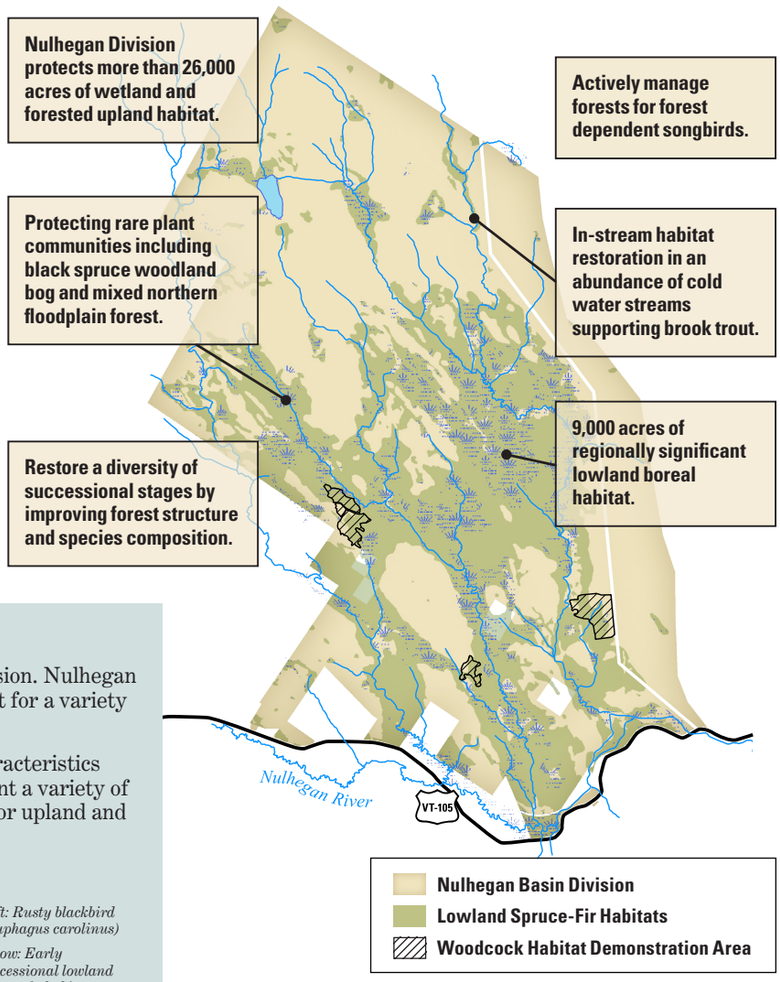


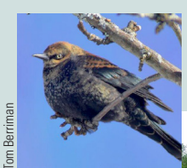
Conservation Designed To Make a Difference

Wildlife conservation is a top priority at Nulhegan Basin Division. Nulhegan provides regionally significant breeding and migratory habitat for a variety of bird species.

Active forest management is designed to improve habitat characteristics essential for "focal species." Focal species are used to represent a variety of wildlife and plants that utilize similar habitats. Focal species for upland and lowland forests include:

- Rusty blackbird
- Canada warbler
- Blackburnian warbler
- Black-throated blue warbler
- American woodcock

Nulhegan contains a mosaic of spruce-fir, northern hardwood, and northern hardwood-conifer forest communities that provide habitat for these species.



Tom Berriman

Left: Rusty blackbird (Euphagus carolinus)

Below: Early successional lowland spruce-fir habitat

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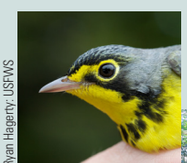
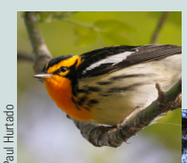


Ryan Hagerty: USFWS

Left: Canada warbler (Cardellina canadensis)

Below: Lowland northern hardwood-conifer habitat

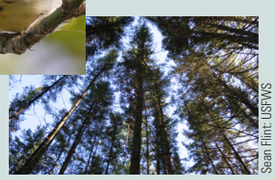
Sean Flint: USFWS



Paul Hurtado

Left: Blackburnian warbler (Setophaga fusca)

Below: Late successional spruce-fir habitat



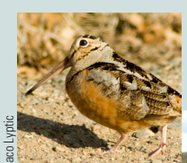
Sean Flint: USFWS

Dan Pancamo

Left: Black-throated blue warbler (Dendroica caerulescens)

Below: Northern hardwood habitat

Sean Flint: USFWS



Paco Lyptic

Left: American woodcock (Scolopax minor)

Below: Early successional northern hardwood habitat

Tom LaPointe: USFWS

Improve the diversity of seral stages, rehabilitate composition and structure, and improve landscape connectivity of spruce-fir habitat to support species of conservation concern and aid in climate change adaptation.

Strategic Habitat Management

Guided by our vision for the refuge's future, we've developed a strategic approach to maintaining and enhancing wildlife habitat while protecting sensitive resources. To be strategic, landscape scale planning guides stand level decisions. Refuge plans include:

Comprehensive Conservation Plan
Landscape Scale Planning

Habitat Management Plan
Biological Strategies

Site Specific Management Prescriptions
On-the-ground Application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Focal Species, Desired Forest Conditions and Forest Management

Forest management at Nulhegan Basin Division will be used to sustain or restore well-distributed, high-quality habitat for species of conservation concern…

Focal species are used to represent a variety of wildlife and plants that utilize similar habitats. Focal species habitat requirements and other important ecological features are used to develop the *desired forest conditions*. Desired forest conditions are used to evaluate forest stands. When needed, forest management is used to create and maintain desired conditions.

Providing suitable habitat for focal species also provides habitat for a variety of associated wildlife and plant species.

Canada warbler represents:

- Lowland northern hardwood-conifer and lowland spruce-fir habitat types
- Complex forest structure
- Northern waterthrush
- Northern parula
- Deer wintering areas
- Canada lynx
- Black spruce
- And more


Ryan Hagerty: USFWS

Canada warbler (Cardellina canadensis)

Current Forest Conditions

Traditional silviculture and ecological considerations will guide forest management at Nulhegan Basin. In forging a strategy to restore forests and manage them sustainably, it is helpful to identify the specific structural and functional changes that have led to current conditions. The forest landscape of the Nulhegan Basin has experienced changes associated with intensive timber management.

- Old forests have been replaced by younger forests
- Structurally complex forests of all ages have been replaced by simplified stands
- Species compositions at a given site have shifted from long-lived species (e.g., red spruce, black spruce, yellow birch) to short-lived species (e.g., aspen, white birch, red maple)
- Forest communities now contain a mix of species other than what occurred through natural processes in the absence of management

Most forest stands at Nulhegan Basin have experienced these kinds of changes, with an associated loss of ecological integrity. These trends can be reversed through targeted and effective management.

Forest Management Direction

An adaptive management approach will be used to restore and maintain desired habitat conditions for focal species. Forest management prescriptions will combine traditional silvicultural techniques with habitat strategies to provide desired forest conditions.

- The intent is to use *even-aged forest management* to provide habitat for American woodcock and rusty blackbird. For both species site selection is essential, and habitat management in close association with beaver influenced wetlands is important.
  - Shade intolerant hardwoods would be managed using 5-20 acre clearcuts for American woodcock.
  - Regenerating softwood openings would be created for rusty blackbird by providing clearcut patches on softwood sites.
- The intent is to use *uneven-aged forest management* to provide habitat for Canada warbler, blackburnian warbler, and black-throated blue warbler. Single tree and group selection harvests would be utilized to rehabilitate (or maintain) forests with attributes similar to those that developed through natural processes such as:
  - Multi-aged forests with a diversity of understory layers
  - Super canopy trees
  - Small interspersed canopy openings within an intact canopy
  - A mature forest condition represented by a generally large diameter shade-tolerant species composition

Other wildlife features to be retained include:

- Coniferous tree species, particularly red spruce
- Snag and cavity trees that range in diameter
- Candidate snag and cavity trees (damaged or in decline)
- Coarse woody debris on the forest floor
- Super-canopy trees, especially red spruce and white pine
- Uncommon tree species such as northern white cedar and hemlock
- American beech, especially those that exhibit potential resistance to beech bark disease


Sean Flint: USFWS


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For more information on Strategic Habitat Management at Nulhegan, visit:
http://www.fws.gov/refuge/Silvio_O_Conte/about/vt.html#nulhegan